

The Effects of Primary Sources and Field Trip Experience on the Knowledge Retention of Multicultural Content

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Introduction

The utilization of primary sources and direct experiences may be a key to fostering student engagement in an inclusive pluralistic society. Gay noted (1975) that "materials, activities, and experiences that are authentic, interdisciplinary, multidimensional, comprehensive, integrative, and that employ both cognitive and affective skills" (p.176) are all viable methods that may help students reach a deeper understanding of ethnic diversity. Within these approaches, one may find the use of primary sources/resources and field trips helpful in perpetuating a greater comprehension of content knowledge related to multicultural curriculum.

As defined by the University of California at Berkeley (2005), a primary source enables the student:

to get as close as possible to what actually happened during a historical event or time period. Primary sources were either created during the time period being studied, or originated at a later date by a participant in the events being studied and they in turn reflect the individual viewpoint of a participant or observer.

There is an array of primary sources that may be utilized for the teaching curriculum. These sources can be diaries, journals, speeches, letters, autobiographies, government or organizational records, photographs, audio or video recordings, anthropological field notes, as well as artifacts that may consist of tools, toys, buildings, furniture, and much more (Manhattan Project Heritage Preservation Association, 2005).

One approach to initiating the use of primary sources in multicultural curriculum is through the facilitation of field trips that incorporate such content and material into the design. Several examples illustrate the inclusion of field trips in learning approaches to enhance students' multicultural education. Belanus and Kerst (1993), Burton and Strickland (1985), Hansen, Lesen, De Avila, Taligas, Wu, and Chuck (1995), Ruelius (1980), Swick, Boutte, and Van Scoy (1995), and Theel (1990) all note the inclusion of field trips as part of a multicultural curriculum.

Altamura's (1993) study of a multicultural awareness program that enhances thinking and language skills, exemplifies the use of field trips and primary sources as components to varying educational techniques utilized in student learning. Other examples such as Hansen et al. (1995) demonstrate the development of lesson plans specific to field trips that promote a multicultural understanding towards a given content.

There is, however, a lack of research related to long-term knowledge retention from a field trip experience that deals with multicultural and primary source content. As Falk and Dierking (1997) note, the need for a broader timeline of memory and knowledge analysis is necessary. Only a small amount of research has been completed on the long-term impacts derived from school field trip experience. Since the discipline lacks a high degree of literature concerning the educational outcome of field trips, the authors investigated the long-term knowledge retention from primary sources that were used on a multicultural field trip for elementary school students.

A deeper understanding of long-term knowledge retention can assist in developing the verification of primary sources and their role in prompting the comprehension of multicultural content, while also improving the field's understanding of learning that transpires in field trip settings.

Therefore, this study assessed the recollections of students who participated in a one-half-day field trip to George Washington Carver National Monument, a site devoted to a multicultural message.

Setting

The site-based field trip was facilitated at the George Washington Carver National Monument, near Diamond, Missouri. The George Washington Carver National Monument is a 210-acre national monument that includes rolling hills, woodlands, and pasture. Within the monument are a three-fourth-mile interpretive trail, museum, gift shop, interactive science laboratory, 1881 Moses Carver house, and Carver cemetery. The Carver trail consists of visiting the Carver bust, cabin site, boy Carver statue, pond, 1881 Carver house, ash hopper, persimmon grove, walnut fence row, Carver cemetery, and prairie.

The science laboratory includes opportunities for a varied age of participants, the use and instruction of scientific equipment related to Dr. Carver's work and achievements, sampling of seven disciplines within the sciences, as well as the opportunity to partake in scientific exploration and analysis. All students from the study had the opportunity to participate in the three-fourth-mile interpretive trail program, hands-on activities within the science laboratory, and activities conducted at the on-site classroom.

Methods

In an attempt to learn as much as possible related to long-term memories of multicultural content associated with the use of primary sources and field trips, the researchers utilized a qualitative approach. Past literature has supported the notion that interview techniques can be more effective than experimental methods for gaining a detailed picture of recall

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(Rennie, Feher, Dierking, & Falk, 2003). As Rennie et al. suggest,

to follow the process of learning is tantamount to getting inside the learner's head, a difficult task indeed. This necessitates new techniques that go beyond questionnaires and pencil and paper tests. Interviews, both structured and open ended, think aloud techniques, audio recordings, and video recordings have all been used to this effect. (p. 116)

In 2003, the *Journal of Research in Science Teaching* supported a policy statement regarding informal science education. This policy included the promotion of more non-traditional research methods, such as qualitative, so that research can offer opportunities to explore social and cultural mediating factors (Dierking, Falk, Rennie, Anderson, & Ellenbogen, 2003, p. 110).

Consequently, this study used a phenomenological approach to investigate the recollections of students from the field trip experience. Phenomenology seeks clarification and understanding of people's perceptions and experiences, especially the meanings they give to events, concepts, and issues (Mabry, 2000). This process examines the experience of each participant and recognizes that these experiences have a relationship with the phenomenon (in this case the field trip experience). However, it is the structure of the variation across the group that emerges through the individual experiences. These "categories," therefore, describe the range of different ways in which a particular group experiences the phenomenon.

There are generally three research processes that compose the phenomenological method: (a) investigation of the phenomena (in this case participant recall of a half-day field trip to George Washington Carver National Monument), (b) identification of general themes/essences of the phenomena, and (c) delineating essential relationships among the themes (Creswell, 1998). The researcher gains responses from the individuals who have experienced the phenomena through in-depth interviews. The responses from the participants are then coded into statements or units. The units are then transformed into clusters of meanings and are tied together to make a general description of the experience. Similar to interpretive biographers, phenomenology views verification and standards as largely related to the researcher's interpretation (Moustakas, 1994).

The subjects for this study were members a fourth-grade class from an elemen-

tary school in a rural town near Diamond, Missouri. The socio-economic status and cultural heritage was middle class and Caucasian. The multicultural field trip was a half-day out-of-school experience at the George Washington Carver National Monument and was conducted in the fall of 2001.

During the program, students participated in an interpretive walk on the Carver History Trail and activities conducted at the on-site classroom, science discovery laboratory, and museum/visitor center. The guided walk and indoor activities examined several aspects of Carver's life, including his struggle and success in overcoming the obstacles of slavery, poverty, and poor health and the significant contributions he made to the fields of science and agriculture.

The students began with a 45-minute interpretive walk outdoors, visiting three trail sites including a talking statue of Carver, the Carver house, and the family cemetery. They were then given time to examine the displays in the museum section of the visitor center and were given access to the gift shop.

The classroom portion of the program featured rangers informing students about the properties of soybean products and then the students participated in an interactive game. Volunteers read aloud descriptions of various items that were also on display and had to guess whether each one was industrial or edible.

The students were then split into two groups, each one alternating between the last two components of the program. One group explored the discovery center with its exhibits, microscopes, and computer terminals. Meanwhile, the other group learned how to make peanut milk and then participated in a hands-on learning activity making peanut milk.

The varying groups were led through programs that were consistent in message and general structure, with the overall theme of overcoming prejudice and poverty. Deviations of the program occurred through different interpretive styles in relating the information and any influences from student input during the programs.

A qualitative analysis was conducted on ten randomly-selected students who participated in the formal educational program at the George Washington Carver National Monument. Students who participated in the program were interviewed at least 12 months following the field trip to analyze recollection. Initial contact with the students included an explanation for

contacting them and then scheduling an interview one-week later. This served as a way for the students to be prepared to participate in the interview, which would include attempted recall of the program.

The open-ended and unstructured interviews began with the following statement: "Can you tell me what you remember about the field trip to George Washington Carver National Monument?" Subsequent statements or questions represented attempts to obtain clarification or elaboration regarding the students' experiences. Interviews were participant-centered in the sense that they (participants) controlled the direction of the interview, including the subject matter and the range of topics discussed.

The students' responses were limited to minimal encouragement, summaries of content, and clarifications. Thus, there was no pre-planned agenda of questions to be covered in the interview and the researchers consistently adhered to these strategies for all ten students. Interviews were discontinued when no new materials and themes were forthcoming from the students. The length of the interviews varied from 20 to 40 minutes.

The responses were transcribed verbatim for each student and a phenomenological analysis was conducted (Creswell, 1998). This was accomplished through three steps. First, raw interview data were extracted through identifying and then coding data into categories. Each transcript was analyzed and broken down into short phrases that described any memory a participant had from the program and his or her trip to the park. Coded words included examples such as house, statue, soybean, slavery, and peanut milk which were all found to be used numerous times.

Second, clusters of data were organized from the statements, which allowed for the emergence of themes common to all the subjects' descriptions. These clusters of themes were referred back to the original transcripts in order to validate the responses and a description of the phenomena resulted from the above analysis. Finally, these themes were reviewed by the authors and a research assistant, analyzing the categories and their properties by comparing them to one another and checking them back to the data.

Results

Two major themes were identified relating to the long-term recollections of the students on the field trip at the George

Washington Carver National Monument: (1) Recollections were influenced by occasions which incorporated action and involvement, and (2) content information was retained by all students participating in the study.

Student Actions

Participants consistently described their recollection of the park program using action verbs such as "talking," "crushing" (peanuts), "listening," "sitting" and implied action using other words such as, "did," "went," "watched," "looked," "see," "press," "showed us." etc.

All ten students used action words/nouns/phrases to describe movement through the particular sites such as, "We went into the trees and like, around that house and stuff and there was these graves." Another student's response uses walking with other action verbs to describe program details and information, "We went on the trails and we went through like a wheat field that his parents, they were slaves and they were working there for their owner."

Two of the categories within the student actions theme received seven responses each. The talked/talking category summarizes those examples for action of speech that is completed in a manner to describe the park program to the students, "They talked about the stairs, how you can pull them down so you can go upstairs." Another response indicates speech as the method utilized by both teacher and ranger educating the students about the same subject, "My teacher and the ranger were telling us about a tree that they have there that they used to hang, hung people."

Seven students responded about and described the hands-on activity that conveys Carver's methods and experimentation in the creation of both soymilk and peanut milk, "Yeah, we crushed up soybeans and made milk and we got to drink it if we wanted some." Another student described the experience: "Yeah, we, you crunched up peanuts. You didn't take anything off of them, you crunched 'em up. You put them in hot milk and, stirred it up and it was ready, but you had to let it sit for a little while."

Visual Action is cited by six participants and is correlated with other aspects of the park. Students described the subject matter in association with a visual experience, "We got to see like a tree with drawers in it and you pulled out the drawers and it showed like butterflies and like a whole bunch of animals and uh walnuts and

stuff, like black walnuts." Five participants recollected seeing the movie, "I think we watched a video." Instead of merely referring to the video, the content of such was embedded in another student's recollection, "Um, we sat and we watched the movie earlier, and watched it to the very end, and it told us about how he grew up, and how he applied his knowledge."

A handful of interpretive displays in the park gained mention by four participants for their active engagement of the visitor, "We got to press these buttons in a center room where stuffed wolves were and birds and you got to hear them chirp and they moved and stuff." Another student discussed the statue of Carver that featured a button-activated audio program and also an animal identification program, "We look on the computer and it had like, um, like an animal set up and you pushed the buttons and the animal, you had to find what animal made the sound."

Educational Content Learning Associated with the Program

The educational content/learning association category represents three distinct components: program information, knowledge gained, and learning/education activities. Students were descriptive in their recall of this content one year after the experience.

George Washington Carver themed topics were cited as a learning-associated topic by all ten of the student participants. For example, reflections on the park slideshow of Carver's life as a boy was recalled by all participants, "Yeah, just how he was Black so he couldn't go to school, but then he ended up going anyway. They talked about how he wasn't treated very well and how sometimes the people were mean to him cause he was a different color and his parents were dead."

Students recalled Carver being displaced from his nuclear family at a young age, "And whenever his mother was getting taken away and they were taking him to these other people because he was too young and weak." Examples of Carver's boyhood life and chores were also discussed by students, "It was the well where they got the water. And that was his chore to do. He always brought that in and they had a pail that he used to use." Students also recollected information regarding slavery from the program: "He wrote a speech that persuaded people to believe that uh, to persuade people that being slaves isn't the best thing in the world and to tell them that

if you were as slave, would you like being treated like they did."

Students also recalled information about discrimination in public school, "Um, he sat behind a schoolhouse and he watched the other children through the windows, to read." When asked "why didn't he go inside?" the same participant answered, "because the school didn't allow Blacks." The participants also referred to the family cemetery plot as a memorial location for the family, "It was like his mom and dad that were in there and maybe him too, I don't remember."

Carver's academic life was also recalled. In a representative citation, one participant gave a general summary, "Just that he lived in that cabin and all, and went to school and college. He did some scientist thing or something." Another participant was more specific, "That he had his own lab, yeah. And, he always worked on seeing what was wrong with the plants there." Yet another participant related knowledge about Carver's education background: "he was really into science and agriculture and he was making all these different experiments and he got a note from Booker T. Washington at this one school and he was able to go teach there. He used to help farmers with their farming....that's all."

Soybeans were the second most frequently-cited learning-associated topic, receiving eight citations. These references were associated with products and processes demonstrated in activities and in programs. One participant said the main thing learned from the field trip was, "Um, how to make soybean crayons," and another said, "They said soybeans are good source of like minerals." Yet another spoke about other uses of soybeans pioneered by Carver, "Yeah, um it was, George Washington Carver grew soybeans in that garden and he used them in his experiments. They talked about that, and that soybean oil and how it smelled like French fries to the bears."

Three tangible aspects of the program were recalled and aided in retaining information about George Washington Carver. The statue received six citations. One participant explained the basics of the interpretive display, "We got to push the buttons and it tells you about his life." Another participant gave a representative citation in saying, "He [tape message voice] told us about, about his life and his sickness and what kind of house he lived in."

The second tangible, the house, received responses from six different participants. One student stated that "she was talking about the chimney in the

house. She said how long it takes to build them out of bricks." Another participant explains an understanding associated with the structure and the source of instruction, "We watched a video, we went like through the whole thing. We went through the whole movie and it showed his bed...and then how his house really look, they had like a picture about how his house looked."

Yet another participant recalls information presented by the ranger, "He talked about the house and how it was all small, but the whole family had to live there." The house was described by an additional student as "small, like really tiny and a ton of people had to live in that tiny house...there wasn't room for all of them, but like, they like had to all live there because they didn't have any money."

A third tangible, the secret garden, was cited by five students. One student noted the importance of the garden as a favorite location for painting, "I remember them talking about the secret forest. That's where he went to go do his paintings, and he had a secret garden there....and that's where he did paintings and all that." Another respondent focused on Carver's interest in flowers, "And with the garden, he [ranger] said he was obsessed with flowers." When the same student was asked for clarification, they added, "He just liked them (flowers)." Yet another student revealed a different knowledge of the site:

And he—that was his medicine garden they called it. He was the, he was the um plant doctor. Because every time a plant would get sick or something, like drop over, he would fix and go put it in his secret garden for like a week or so and then give it back to the other people it would be better.

Discussion

As noted previously, the use of primary sources and field trips can be of benefit when working towards a deeper integration of multicultural content. Primary sources and the use of native material have long been advocated in education, and consistently in the curriculum of social studies (Sharpe, 1943; Hopkinson, 2001).

Although small in scope, this study adds support for long-term benefits of the use of primary sources, through field trips, for the advancement of multicultural content. The results indicate that the utilization of primary sources in a field trip experience to George Washington Carver National Monument promoted knowledge retention related to the site and the mes-

sage associated with the site. Further, the interactions with the primary sources were also vividly retained by the participants.

All ten students were able to recollect specific events or actions that took place. When asked about those experiences, one-year later, students were able to discuss important details such as, "Okay, so we went to George Washington Carver National Monument and like we walked around and saw his house and stuff. And it was small, like really tiny and a ton of people had to live that tiny house...there wasn't room for all of them, but like, they like had to all live there because they didn't have any money."

Another student recollected that they "went to see a cabin. Like where he lived and where his parents lived...it had like a wagon there, and like a little restroom on the side of the house...and the cabin was really small." This student added further that the "there was like a big wooden fence around the house and uh, inside the house it was really crowded and there wasn't much space."

All ten students participating in the study divulged knowledge gained from the field trip experience. Not only was such knowledge present, but detailed descriptions of major themes and concepts from the experience were collected, "And whenever his mother was getting taken away and they were taking him to these other people because he was too young and weak." Another student was able to discuss in detail one of Carver's speeches about slavery, "He wrote a speech that persuaded people to believe that uh, to persuade people that being slaves isn't the best thing in the world and to tell them that if you were as slave, would you like being treated like they did?"

Compassionate Tendencies

The most notable data from this study is the potential long-term compassion and/or understanding of Carver's achievements exhibited by the students. Five of the ten student participants discussed recollections from the one-half-day field trip that may illustrate compassionate reflections towards George Washington Carver.

One student was able to recall the details of Carver's lack of formal education and understood how he was treated as a youth because of his race, "Yeah, just how he was Black so he couldn't go to school, but then he ended up going anyway. They talked about how he wasn't treated very well and how sometimes the people were mean to him 'cause he was a different

color and his parents were dead." Another student explained further, "Um, he sat behind a schoolhouse and he watched the other children through the windows, to read." When asked by the researcher, "why didn't he go inside?", the same participant answered, "because the school didn't allow Blacks."

In response to discussing Carver's house, another student explained that "I liked his house the most. Because we got to see where he lived. It was like I was living with him." Carver's significance was noted by another student, "how important his life was to us, and it showed us how to uh, what, what like groups, like how his life was treated 'cause that's important to like, our life."

Yet another student was supportive of Carver and his fight against racial segregation, stating that "like the separation of Blacks and Whites—like the Blacks got the crappy toilets with all the mold growing up in it and all the, they got the stinky seats, like the sewer water. And the White people got like the good faucets with nice, clean water...and like, the Blacks had their own stinky restaurants and the Whites had their nice 5-star restaurants." This student further explained that "it was bad and all. Like, so we stop it and don't do that anymore...cause it wasn't the right thing to do and all."

Upon exploring the remnants of an old tree that was once used to hang runaway slaves, the one student explained that "my teacher and the ranger were telling us about a tree that they used to hang, hung people" (runaway slaves). When asked about her feelings concerning this action the student replied, "Yeah, I think it's hatred, I don't think that they should have done that."

These statements may reflect not only recollections of Carver's challenges, but could also be seen as views of tolerance. The idea that primary sources and direct experiences may perpetuate tolerance has recently been noted by educators and researchers (Lintner, 2005). The use of primary sources and field trips are observed as being components to programs which foster a growth in cultural tolerance on multiple occasions (Demovsky & Niemuth, 1999; Kieme, Landes, Rickertson, & Wescott, 2002). Such material is incorporated into curriculum designs that attempt to not only increase students' knowledge of place and culture, but work to broaden student's world views, their interconnection to other people and places, as well as foster service to others (Peace Corps World Wise Schools, 2002).

Conclusion

Although small in scope, this study attempted to analyze the impacts of primary sources and field trip experiences on multicultural education through first-hand narrative interviews, one year after the experience. The results support the usefulness of primary sources in an interactive field trip experience to promote multicultural content and tolerance. Within this study, in particular, the notion of compassionate tendencies toward George Washington Carver prompts a tremendous need for further inquiry into the long-term impacts of other field trips that attempt to convey multicultural messages.

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